

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1-9 and 11-14 have been canceled without prejudice or disclaimer. New claims 15-28 have been added. New dependent claims 17-26 correspond to original dependent claims 2-11, respectively. No new matter is added.

A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

Claims 15-28 are now pending in this application.

Rejections under 35 U.S.C. § 103

Claims 1, 2, 5-9, and 11-14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over EP 1,174,600 A2 to Kobayashi et al. ("Kobayashi") in view of U.S. Patent No. 5,974,791 to Hirota ("Hirota") and U.S. Patent No. 6,574,956 to Moraal et al. ("Moraal"). Claims 3 and 4 stand rejected under § 103(a) as being unpatentable over Kobayashi in view of Hirota and Moraal, and further in view of certain legal precedent. Insofar as these rejections may be applied to the claims as amended, applicants respectfully traverse for at least the following reasons.

The device of independent claim 15 recites:

A purification device for an exhaust gas of a diesel engine, the diesel engine comprising a catalyst which traps nitrogen oxides in the exhaust gas but decreases a nitrogen oxides trapping performance when poisoned by sulfur oxides in the exhaust gas, and a filter which traps particulate matter in the exhaust gas, the device comprising:

a programmable controller programmed to:

determine if an elimination of the sulfur oxides poisoning the catalyst is required;

perform a process of eliminating the sulfur oxides poisoning the catalyst, when elimination of the sulfur oxides poisoning the catalyst has been determined to be required;

determine if a regeneration of the filter is required while performing the process of eliminating the sulfur oxides;

perform the regeneration of the filter while interrupting the process of eliminating the sulfur oxides, when the regeneration of the filter has been determined to be required;

determine during the regeneration of the filter if a residual particulate matter in the filter has decreased to a level which does not damage the filter when the residual particulate matter in the filter burns; and

stop the regeneration of the filter and resume the process of eliminating the sulfur oxides poisoning the catalyst, when the residual particulate matter in the filter has decreased to a level which does not damage the filter when the residual particulate matter in the filter burns.

The references applied in the rejection of the claims fail to suggest or disclose at least the above italicized features of claim 15.

In contrast to claim 15, Kobayashi does not disclose interrupting a process of eliminating sulfur oxides in the catalyst when the regeneration of the particulate filter has been determined to be required during the process of eliminating the sulfur oxides. Kobayashi discloses that when it is determined that a process of eliminating sulfur oxides should be performed, but the amount of the trapped particulate matter in the particulate filter is greater than a predetermined amount, the Kobayashi system first performs a regeneration of the particulate filter and then performs the elimination of sulfur oxides after the regeneration of the particulate filter is completed. Thus, Kobayashi merely discloses performing a process of eliminating sulfur oxides from the catalyst after the regeneration of the particulate filter is completed. Kobayashi does not disclose interrupting the process of eliminating sulfur oxides from the catalyst when the particulate filter has been determined to require the regeneration and performing the regeneration with the process of eliminating sulfur oxides interrupted.

Moreover, claim 15 further recites that the controller is programmed to “determine during the regeneration of the filter if a residual particulate matter in the filter has decreased to a level which does not damage the filter when the residual particulate matter in the filter

burns; and stop the regeneration of the filter and resume the process of eliminating the sulfur oxides poisoning the catalyst, when the residual particulate matter in the filter has decreased to a level which does not damage the filter when the residual particulate matter in the filter burns.” Kobayashi also fails to disclose these features of claim 15, as apparently recognized in the Office Action. The Office Action relies on Moraal for disclosing details of interrupting a regeneration cycle of a particulate filter if the filter exceeds a particular temperature range. Moraal, however, fails to cure the deficiencies of Kobayashi.

First, Moraal, like Kobayashi, does not suggest interrupting a process of eliminating sulfur oxides in a catalyst when the regeneration of the particulate filter has been determined to be required during the process of eliminating the sulfur oxides. In fact, Moraal does not disclose a NOx trapping catalyst at all, and thus does not disclose elimination of sulfur oxides poisoning from such a NOx trapping catalyst.

Second, while Moraal discloses interrupting the regeneration of a diesel particulate filter (DPF), Moraal does not suggest the feature of “determine during the regeneration of the filter if a residual particulate matter in the filter has decreased to a level which does not damage the filter when the residual particulate matter in the filter burns; and stop the regeneration of the filter and resume the process of eliminating the sulfur oxides poisoning the catalyst, when the residual particulate matter in the filter has decreased to a level which does not damage the filter when the residual particulate matter in the filter burns”, as in claim 15. Moraal merely discloses a twofold method for interrupting regeneration of the DPF when a critical threshold temperature is exceeded (col. 1, lines 31-34, 61-66). Moraal does not disclose interrupting its DPF regeneration based on the residual particulate matter in its DPF being determined to be below a particular level, nor does Moraal contemplate interrupting its DPF regeneration in the context of a process of eliminating sulfur oxides poisoning a catalyst.

In sum, even if Kobayashi were modified according to the teachings of Moraal, the combination would still not have a number of features of claim 15.

Hirota was cited for allegedly disclosing using a lean exhaust gas composition to purge particulate matter from a diesel particulate filter, but fails to cure the deficiencies of Kobayashi and Moraal.

Independent claims 27 and 28 include language corresponding to that discussed above with respect to claim 15, and thus are allowable for analogous reasons. Dependent claims 16-26 ultimately depend from claim 15, and are patentable for at least the same reasons.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date September 28, 2006

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